

Fig. 1

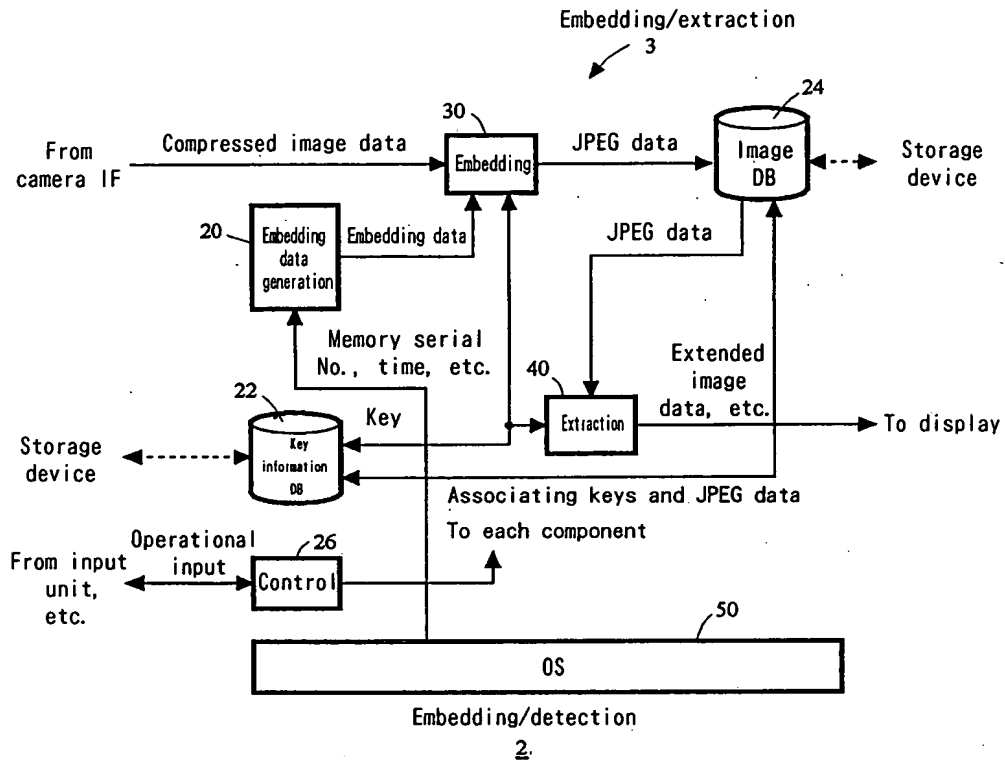


Fig. 2

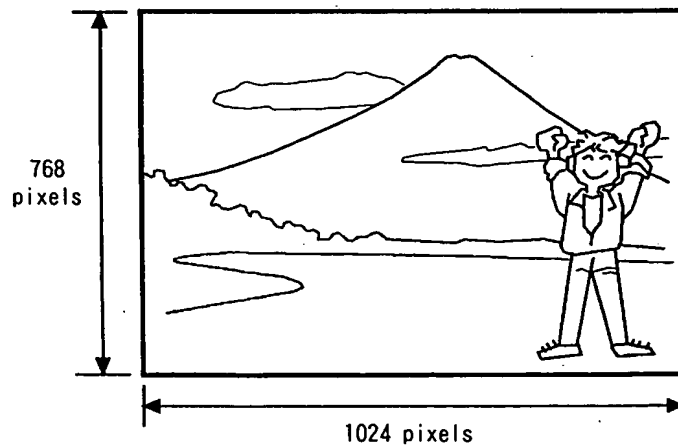


Fig. 5

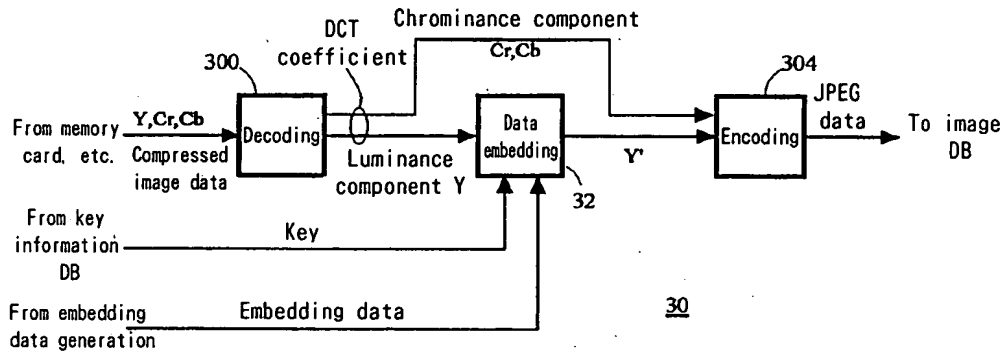


Fig. 3

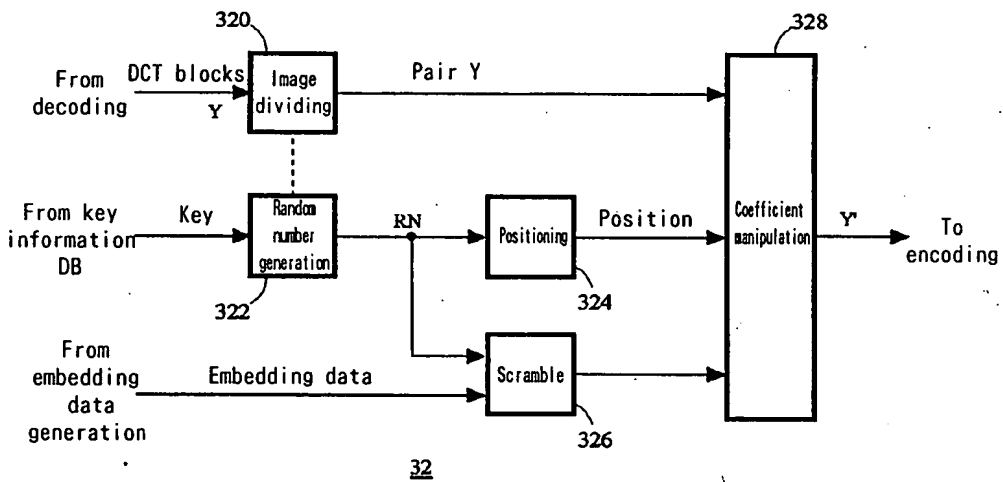


Fig. 4

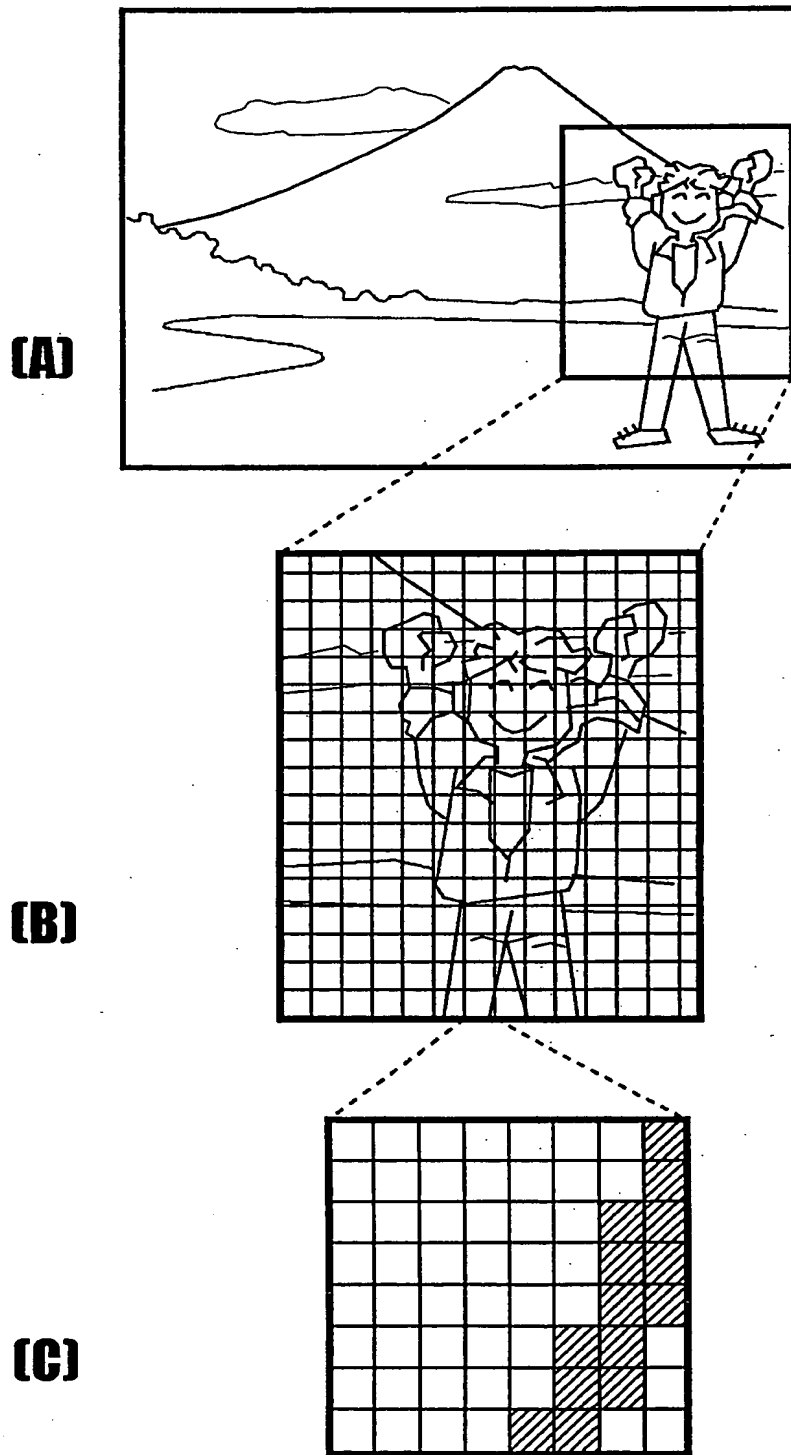


Fig. 6

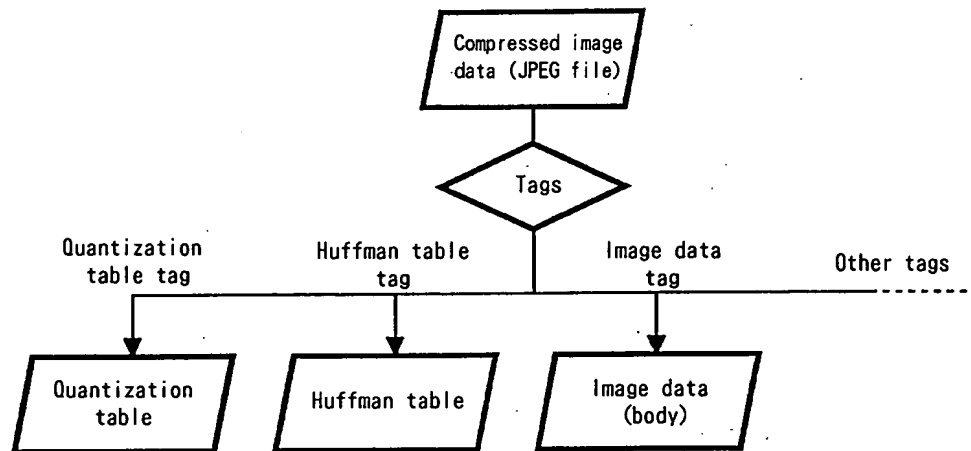


Fig. 7

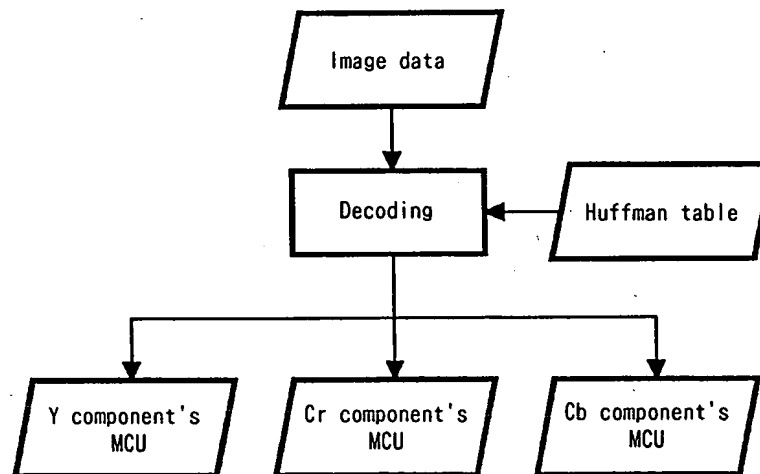


Fig. 8

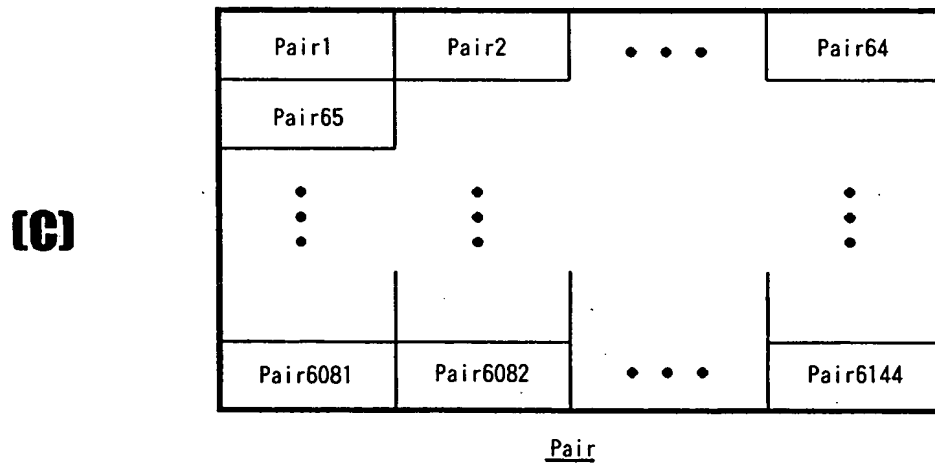
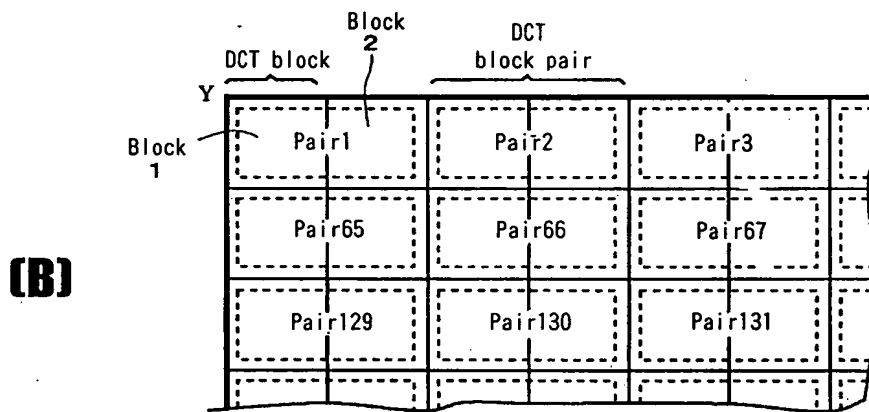
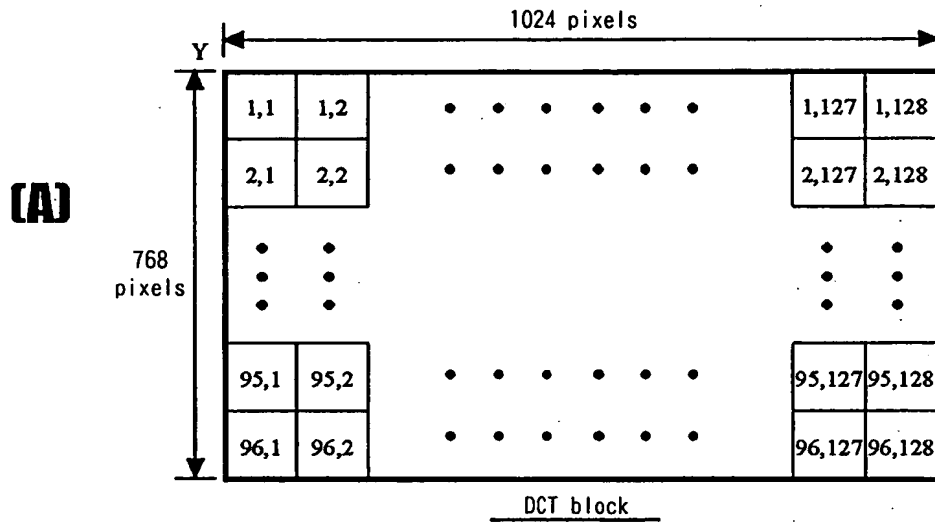


Fig. 9

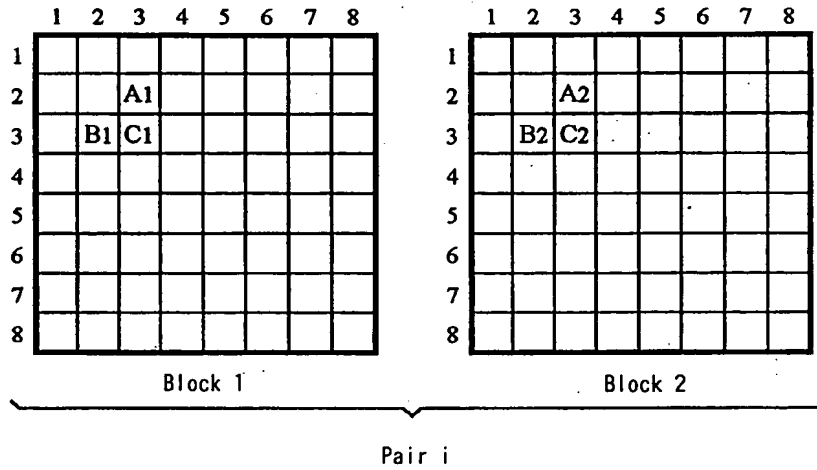


Fig. 10

Pair i ← Embed the bit "1"

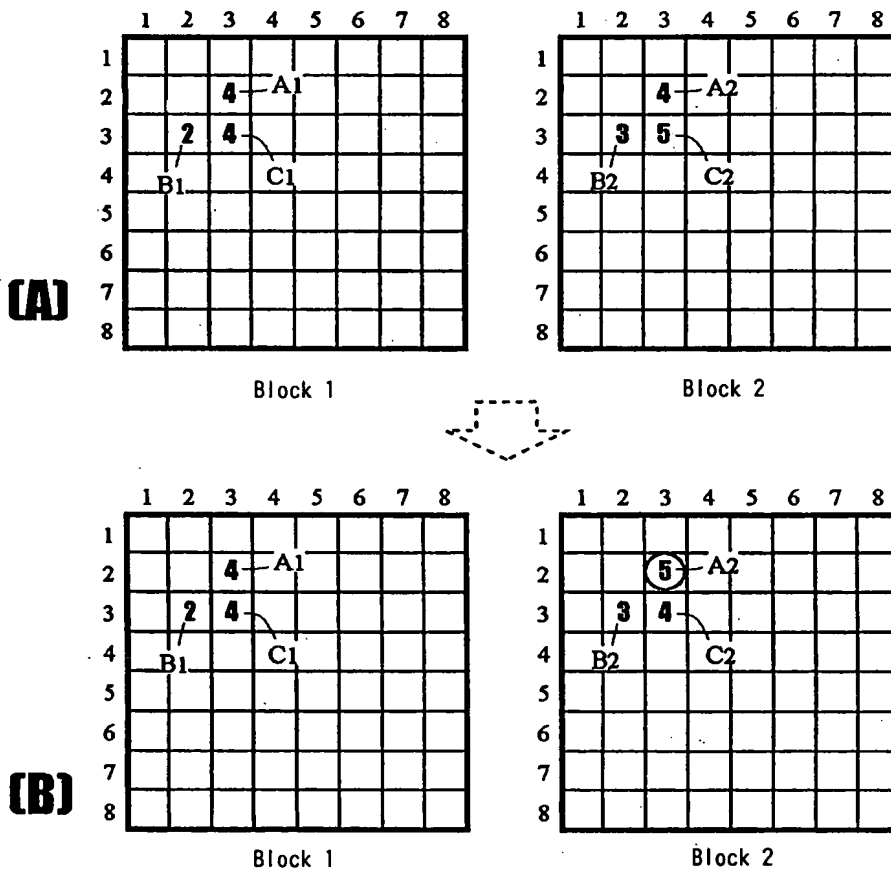


Fig. 11

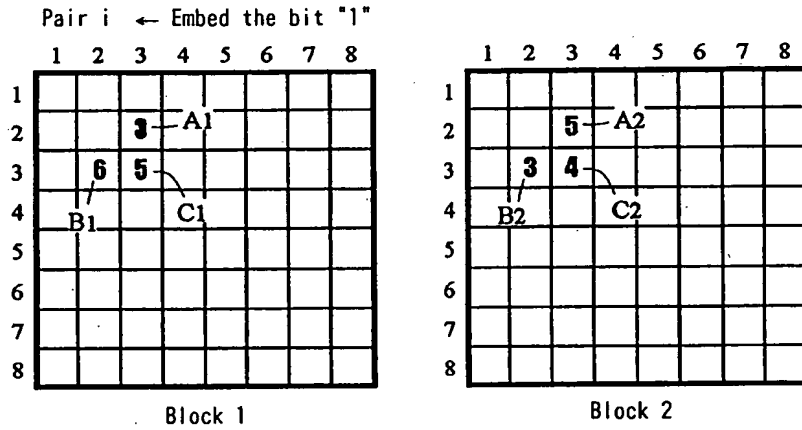


Fig. 12

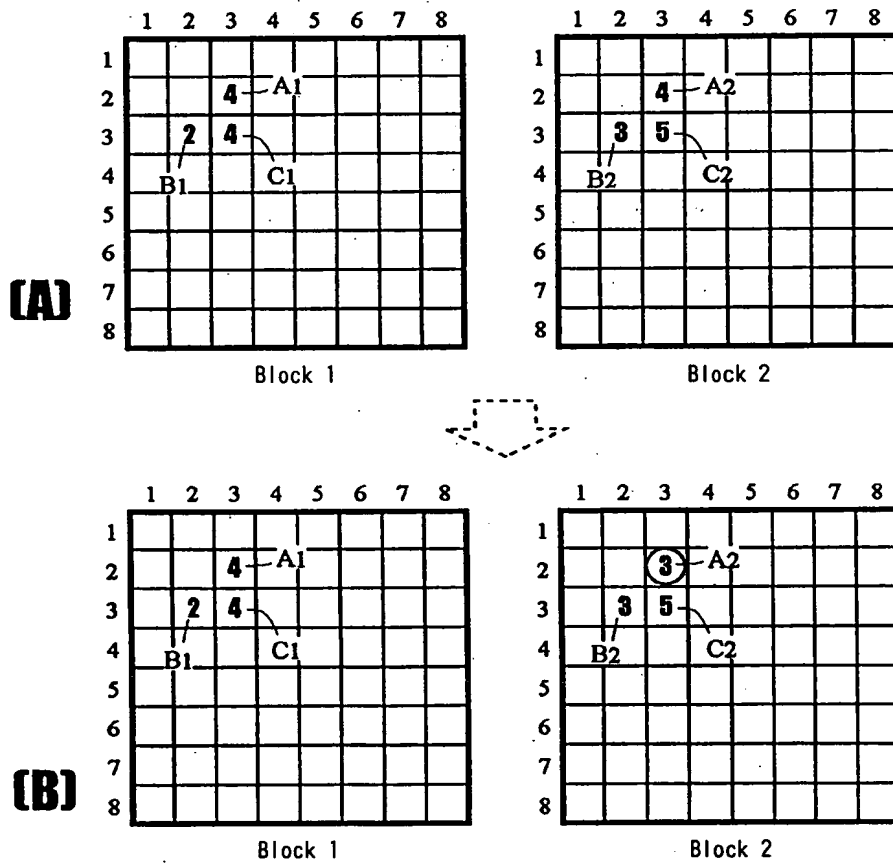


Fig. 13

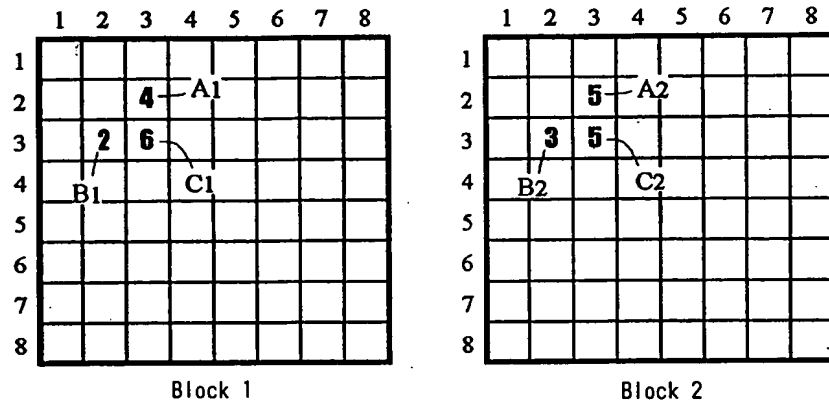


Fig. 14

DCT block pair No.	Block 1 coefficient			Block 2 coefficient			Embedding data's bit No. (1~96)	Embedding data allocation
	A1	B1	C1	A2	B2	C2		
1	1	5	2	5	6	3	31	1
2	5	8	9	2	5	5	21	0
3	2	10	9	5	1	2	18	1
4	1	11	5	5	3	20	65	0
5	10	2	25	1	3	24	7	1
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
160	5	30	11	6	9	10	7	1
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
6144	51	20	11	3	19	15	34	1

Fig. 15

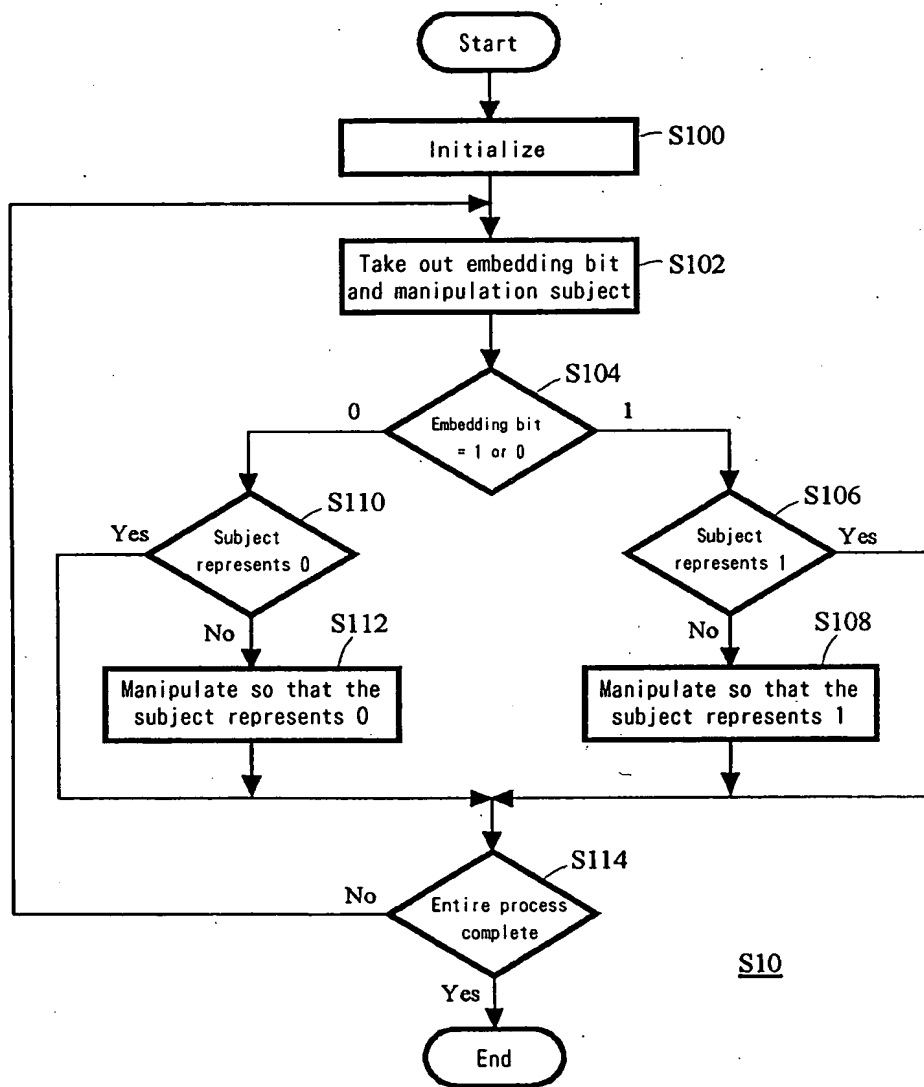


Fig. 16

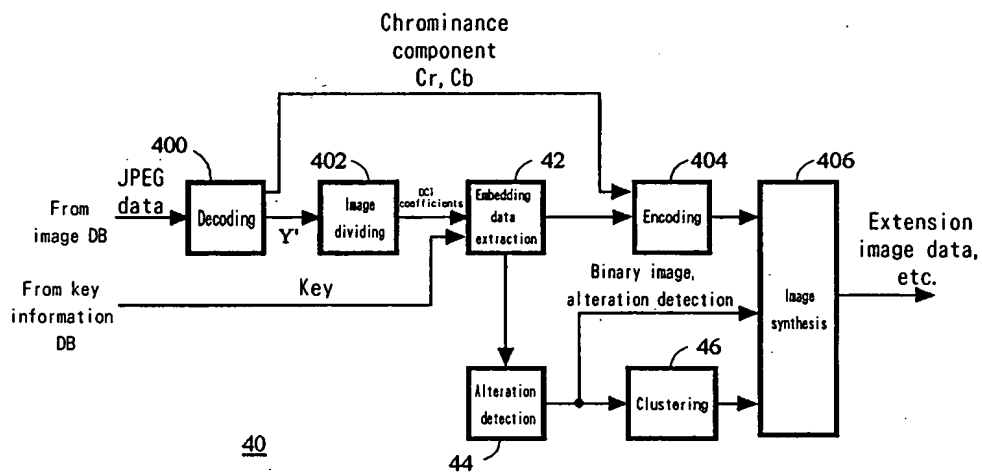


Fig. 17

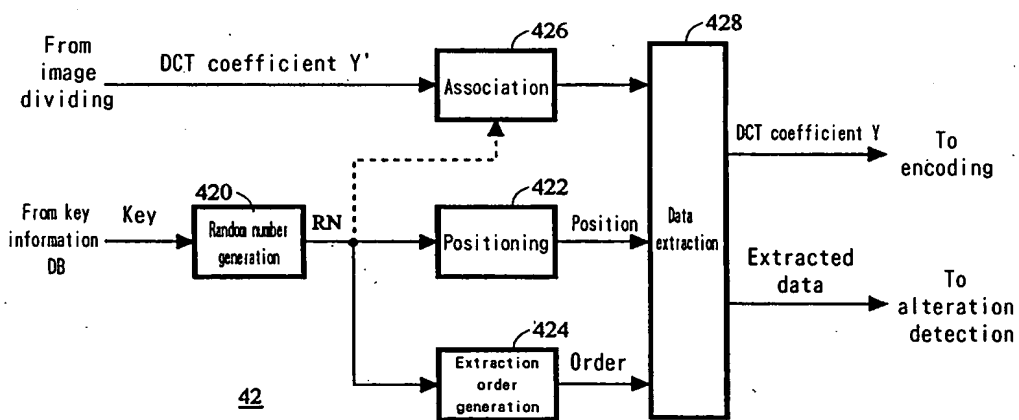
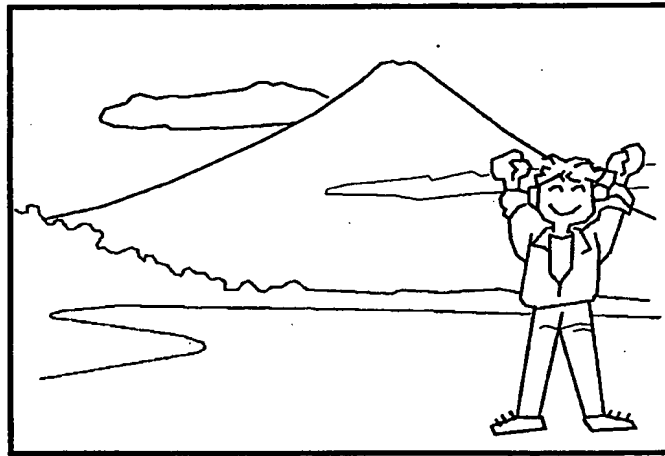
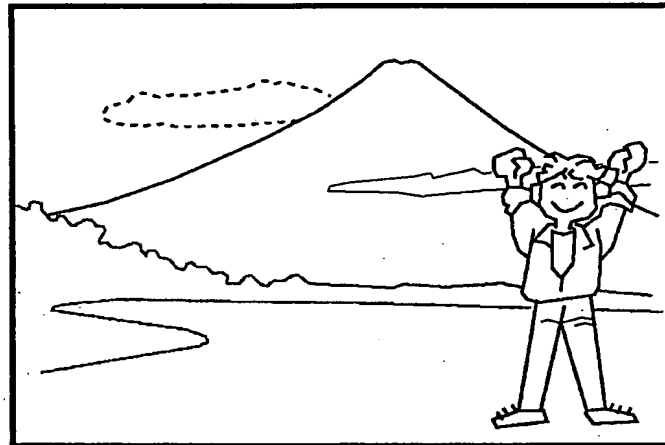


Fig. 18

(A)



(B)



(C)

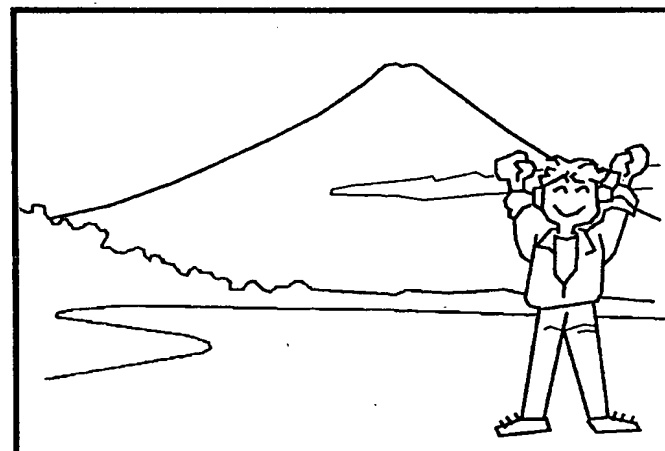


Fig. 19

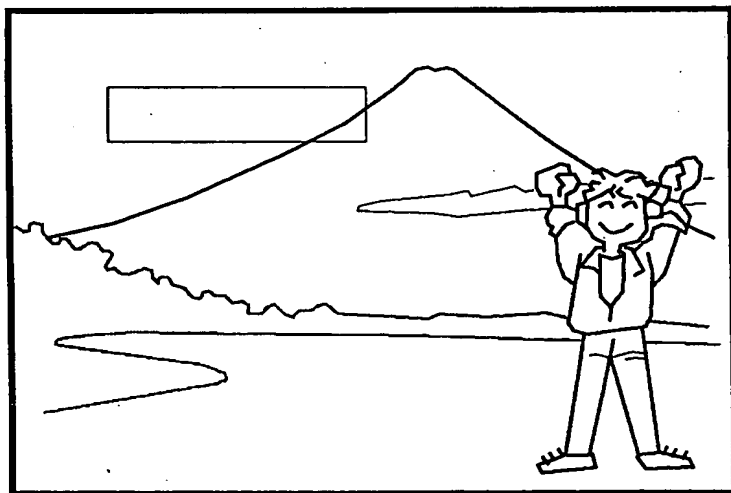


Fig. 21

	1	2	3	4	5		96
Pairs 1-96	Pair11 1	Pair5 0	Pair31 1	Pair9 1	0	-----	1
Pairs 97-192	Pair99 1	Pair126 0	Pair150 1	Pair153 1	0	-----	1
Pairs 193-288	1	0	1	1	0	-----	1
Pairs 289-384	1	0	1	1	0	-----	1
⋮	⋮	⋮	⋮	⋮	⋮		⋮
Pairs 6049-6144	1	0	1	0	0	-----	1
Extraction result	1	0	1	1	0	-----	1

Repeat 64 times

Fig. 22

Detected embedding data's bit number

	1	2	3	4	5		96
Pairs 1-96	Block 11 1 _A	Block 5 0 _B	Block 31 1 _A	Block 9 1 _A	0 _B	-----	1 _A
Pairs 97-192	Block 99 1 _A	Block 126 0 _B	Block 150 1 _A	Block 153 1 _A	0 _B	-----	Block 185 0 _B
Pairs 193-288	1 _A	0 _B	1 _A	Block 255 0 _B	0 _B	-----	Block 254 0 _B
Pairs 289-384	1 _A	Block 315 1 _A	1 _A	0	Block 316 1 _A	-----	1 _A
Pairs 385-480	Block 399 0 _B	Block 400 0	1 _A	1 _A	0 _B	-----	1 _A
Pairs 481-576	1 _A	0 _B	1 _A	1 _A	Block 520 1 _A	-----	1 _A
⋮	⋮	⋮	⋮	⋮	⋮		⋮
Extraction result	1	0	1	1	0	-----	1

☐ Mismatch

Fig. 23

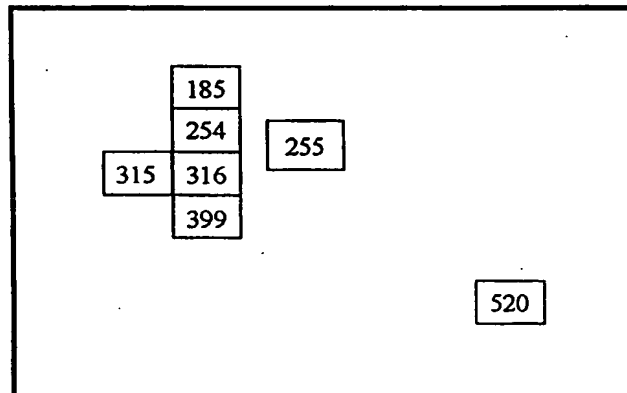
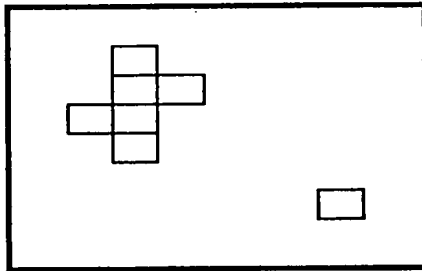
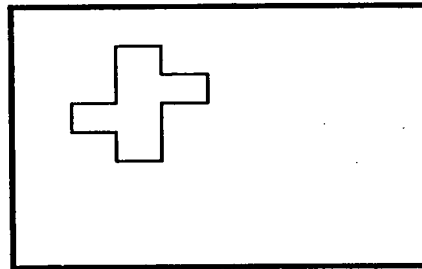


Fig. 24

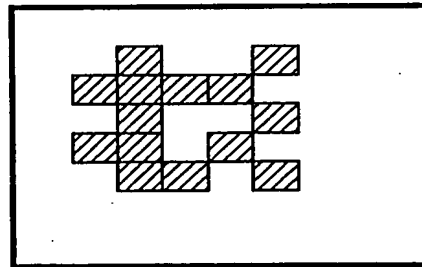
(A)



(B)



(C)



(D)

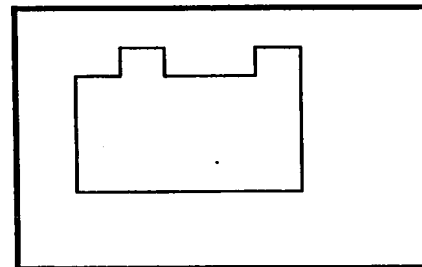


Fig. 25

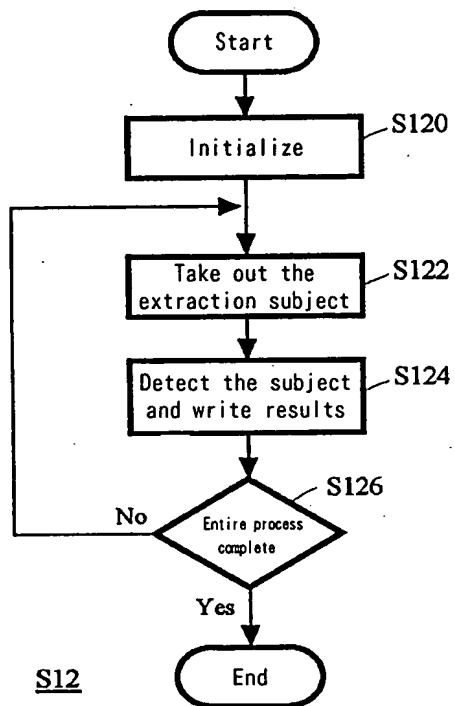


Fig. 26

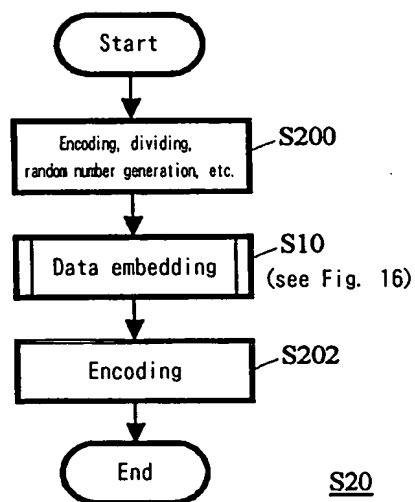


Fig. 27

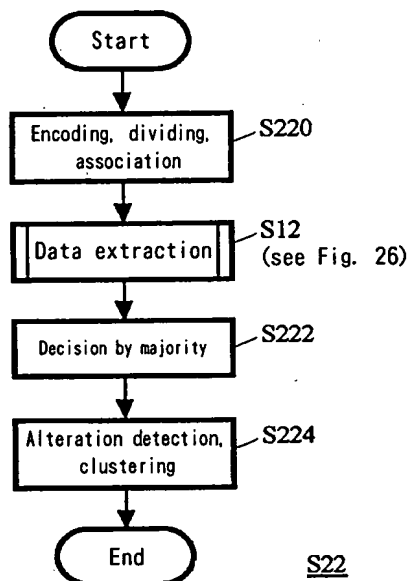


Fig. 28

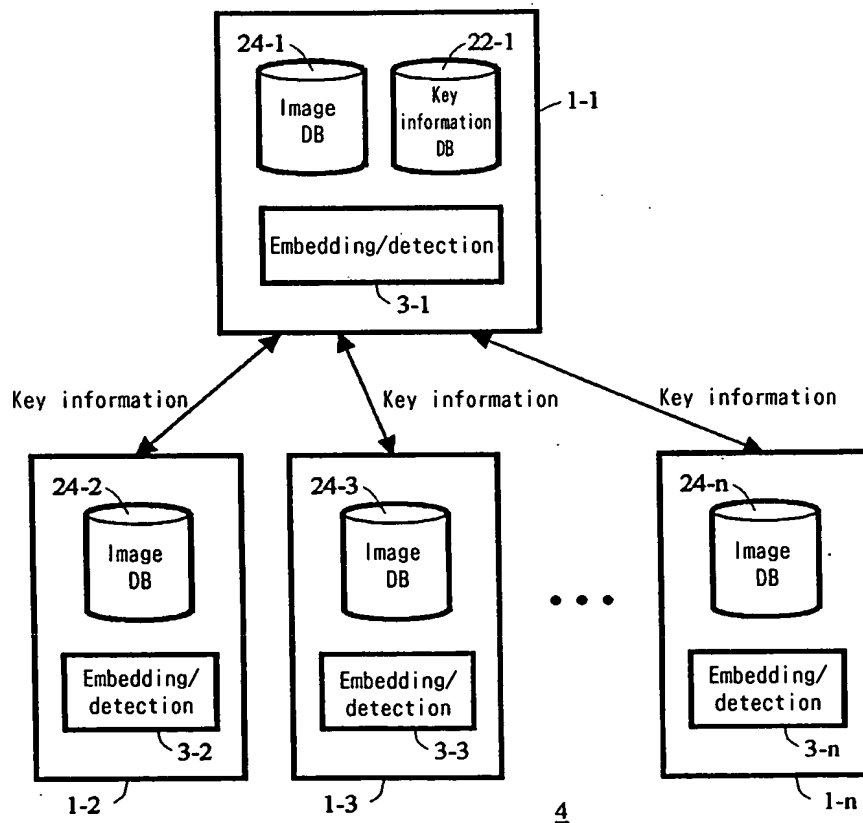


Fig. 29

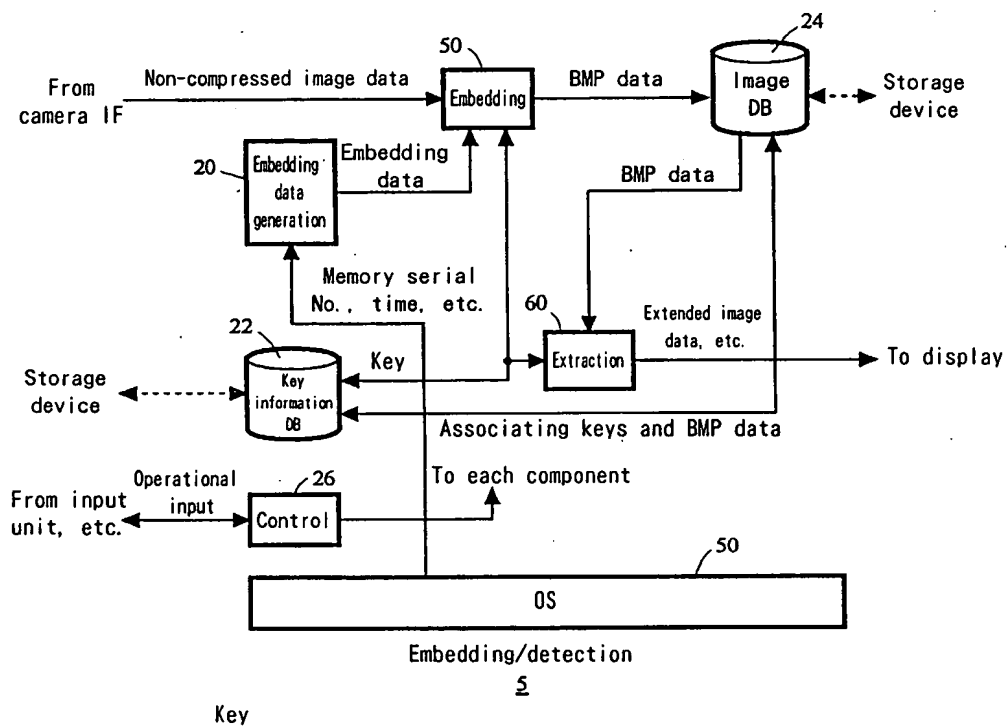


Fig. 30

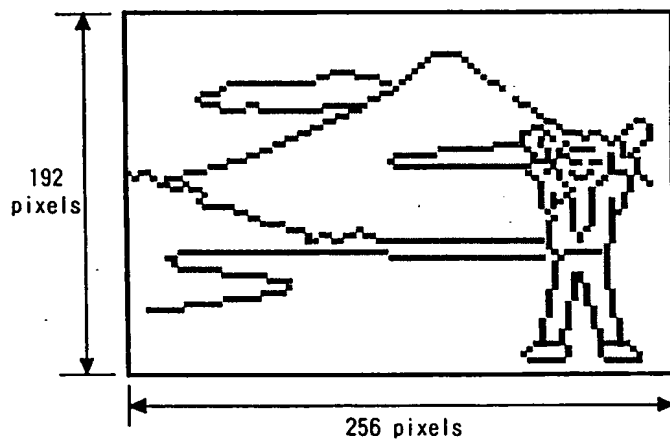


Fig. 31

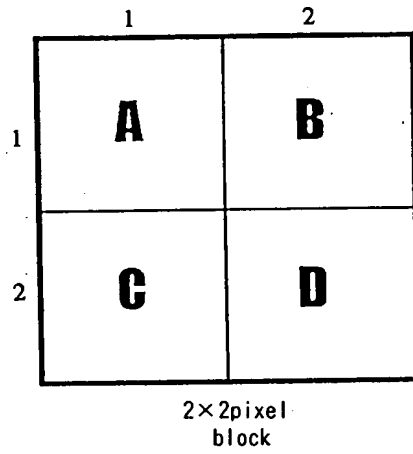


Fig. 32

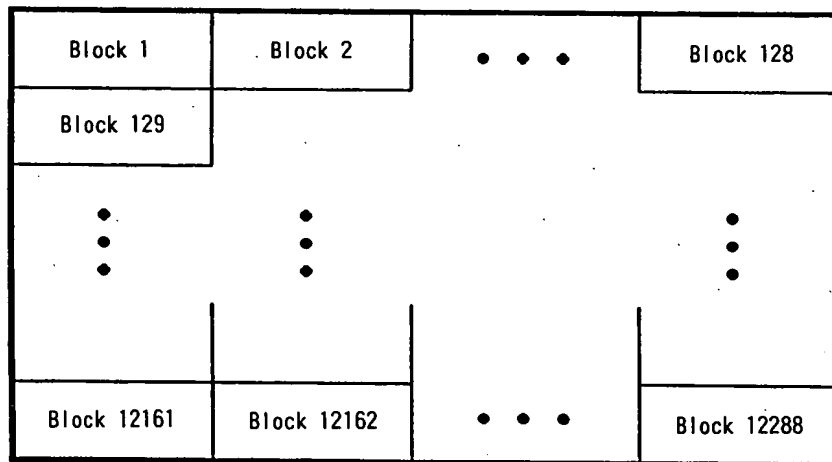


Fig. 33

2×2pixel block No.	2×2pixel block's pixel value				Embedding data's bit No.	Embedding data allocation
	A	B	C	D	(1~96)	
1	1	5	2	5	31	1
2	5	8	9	2	21	0
3	2	10	9	5	18	1
4	1	11	5	5	65	0
5	10	2	25	1	7	1
⋮	⋮	⋮	⋮	⋮	⋮	⋮
160	5	30	11	6	7	1
⋮	⋮	⋮	⋮	⋮	⋮	⋮
12288	51	20	11	3	34	1

Fig. 34

(A)

	1	2
1	13	52
	A	B
2	164	0
	C	D



(B)

	1	2
1	12	52
	A	B
2	164	0
	C	D

Fig. 35

	1	2
1	166	252
	A	B
2	58	2
	C	D

Fig. 36

002140-2284560

[A]

	1	2
1	21	101
	A	B
2	253	0
	C	D



[B]

	1	2
1	21	101
	A	B
2	253	1
	C	D

Fig. 37

	1	2
1	11	57
	A	B
2	89	121
	C	D

Fig. 38

003740 2284950

Detected embedding data's bit number

	1	2	3	4	5		96
Blocks 1-96	Block 11 1 _A	Block 5 0 _B	Block 31 1 _A	Block 9 1 _A	0 _B	-----	1 _A
Blocks 97-192	Block 99 1 _A	Block 126 0 _B	Block 150 1 _A	Block 153 1 _A	0 _B	-----	Block 185 0 _B
Blocks 193-288	1 _A	0 _B	1 _A	Block 255 0 _B	0 _B	-----	Block 254 0 _B
Blocks 289-384	1 _A	Block 315 1 _A	1 _A	c	Block 316 1 _A	-----	1 _A
Blocks 385-480	Block 399 0 _B	Block 400 c	1 _A	1 _A	0 _B	-----	1 _A
Pairs 481-576	1 _A	0 _B	1 _A	1 _A	Block 520 1 _A	-----	1 _A
⋮	⋮	⋮	⋮	⋮	⋮		⋮
Extraction result	1	0	1	1	0	-----	1

Repeat 128 times

☐ Mismatch

Fig. 39